

File No PLC/651

11 July 2006

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME  
(NICNAS)**

**FULL PUBLIC REPORT**

**WE-7**

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment and Heritage.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at:

Library  
Australian Safety and Compensation Council  
25 Constitution Avenue  
CANBERRA ACT 2600  
AUSTRALIA

To arrange an appointment contact the Librarian on TEL + 61 2 6279 1162 or email [ascc.library@dewr.gov.au](mailto:ascc.library@dewr.gov.au)

This Full Public Report is available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888.
Website:	<a href="http://www.nicnas.gov.au">www.nicnas.gov.au</a>

**Director  
NICNAS**

## TABLE OF CONTENTS

FULL PUBLIC REPORT.....	3
1. APPLICANT AND NOTIFICATION DETAILS .....	3
2. IDENTITY OF CHEMICAL .....	3
3. PLC CRITERIA JUSTIFICATION .....	3
4. PHYSICAL AND CHEMICAL PROPERTIES .....	4
5. INTRODUCTION AND USE INFORMATION.....	4
6. HUMAN HEALTH IMPLICATIONS.....	5
6.1. Exposure Assessment .....	5
6.2. Toxicological Hazard Characterisation .....	5
6.3. Human Health Risk Assessment.....	5
7. ENVIRONMENTAL IMPLICATIONS .....	6
7.1. Exposure Assessment .....	6
7.2. Environmental Hazard Characterisation .....	6
7.3. Environmental Risk Assessment .....	6
8. CONCLUSIONS.....	7
8.1. Level of Concern for Occupational Health and Safety .....	7
8.2. Level of Concern for Public Health .....	7
8.3. Level of Concern for the Environment .....	7
9. MATERIAL SAFETY DATA SHEET.....	7
9.1. Material Safety Data Sheet .....	7
10. RECOMMENDATIONS .....	7
10.1. Secondary Notification .....	8

**FULL PUBLIC REPORT****WE-7****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Brother International (Aust.) Pty Ltd  
 7 Khartoum Road  
 NORTH RYDE NSW 2113  
 ABN: 17 001 393 835

## NOTIFICATION CATEGORY

Polymer of Low Concern

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Molecular Weight, Spectral Data, Polymer Constituents, Residual Monomers/Impurities, Import Volume

## VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

## PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

No

## NOTIFICATION IN OTHER COUNTRIES

None

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

WE-7

## REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups

## MOLECULAR WEIGHT

> 1000

**3. PLC CRITERIA JUSTIFICATION**

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

#### 4. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20°C and 101.3 kPa</b>	Light yellow powder
<b>Melting Point/Glass Transition Temp</b>	69-74°C
<b>Density</b>	540 kg/m <sup>3</sup> at 20°C
<b>Water Solubility</b>	Insoluble
<b>Dissociation Constant</b>	Not applicable. The notified polymer is assumed to have negligible dissociation constant as the substance is not soluble in water and does not contain any functional groups that can be ionised under normal conditions.
<b>Particle Size</b>	477 µm (average)
<b>Reactivity</b>	Stable under normal environmental conditions
<b>Degradation Products</b>	Stable up to 6 month under normal conditions. May undergo hydrolysis under extreme temperature and acid/base conditions to its monomer units.

#### 5. INTRODUCTION AND USE INFORMATION

##### MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	<4	<4	<4	<4	<4

##### USE AND MODE OF INTRODUCTION AND DISPOSAL

###### Mode of Introduction

The notified polymer will be imported as a component of printer/copier toner at a maximum concentration of 15% in purpose built sealed toner cartridges.

###### Reformulation/manufacture processes

The notified chemical will not be manufactured or reformulated in Australia. It will be imported as a component of printing toner. The toner will be imported and supplied in purpose built, sealed cartridges which would be inserted inside the printing equipment. The sealed cartridges will be handled by service technicians or office workers replacing the spent cartridges in the printer.

###### Use

The notified polymer is an additive in printer/copier toner.

## **6. HUMAN HEALTH IMPLICATIONS**

### **6.1. Exposure Assessment**

#### OCCUPATIONAL EXPOSURE

##### *Transport & Warehousing*

Workers are not expected to be exposed to the imported notified polymer during transport and storage, as they will be handling closed containers. Dermal exposure is possible in the event of an accident where the packaging is breached.

##### *Service Technicians*

Service technicians will come into contact with the sealed cartridges during printer maintenance. Any empty or defective cartridges will be replaced with new ones. No attempt will be made to repair or refill the cartridges. The most likely route of exposure to the notified polymer is dermal. Inhalation exposure is unlikely as the notified polymer is of high molecular weight and is expected to have negligible vapour pressure and the formation of dust is unlikely due to the sealed nature of the cartridge. Similarly, accidental oral exposure is not expected to be significant. Exposure is expected to be controlled through the design of the cartridges and the printing machines. Printer maintenance personnel often wear cotton disposable gloves. Pre-packed toner cartridges are sealed and worker exposure to the toner is minimised by the use of the replacement procedures recommended by the manufacturer.

##### *Office Workers*

Office workers will replace used, empty cartridges as per the manufacture's instructions. The main route of exposure will be dermal. However, since the cartridges are sealed, there is low risk of such exposure.

##### *Retail Workers*

These workers will be involved in opening cardboard cartons, removing the cartridges, which will be contained within an outer cardboard box and stacking the individual boxes onto shelves. These workers will not have any contact with the cartridge and thus minimal exposure to the notified polymer is expected.

#### PUBLIC EXPOSURE

The scenarios by which the public may be exposed to the notified chemical would involve home use of printers, and are similar to those for office workers. However, it is expected that the public will be using the printer less often than workers.

### **6.2. Toxicological Hazard Characterisation**

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

### **6.3. Human Health Risk Assessment**

#### OCCUPATIONAL HEALTH AND SAFETY

The OHS risk presented by the notified polymer is expected to be low, based on the minimal exposure to workers and the low intrinsic hazard of the polymer.

Although exposure to the notified polymer could occur in the event of an accident, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer and the protective measures recommended by the manufacturer.

#### PUBLIC HEALTH

The risk to public health presented by the notified polymer is expected to be low due to its intrinsic low toxicity and low potential for exposure.

## 7. ENVIRONMENTAL IMPLICATIONS

### 7.1. Exposure Assessment

#### ENVIRONMENTAL RELEASE

No release is expected as reformulation or repackaging of the notified chemical or products containing it will not take place in Australia.

#### RELEASE OF CHEMICAL FROM USE

Release of the contents of the cartridge to the environment is not expected under normal use. The cartridges are designed to prevent leakage. These will be changed by service technicians, office workers and the public. However, if minor leakage or spill does occur, the toner will be wiped with absorbent cloth or it will be vacuumed. Any residues will be disposed in landfill.

Once the notified chemical is released onto the paper, most of the notified chemical is expected to remain adsorbed to the paper and trapped within the dried print on the paper. The notified polymer is expected to have a low vapour pressure. Thus it is not expected to volatilise or be emitted into the air from printing application.

Based on the typical print job, <100 mg of toner is deposited per page. Paper to which the notified chemical will be bound will eventually be buried in landfill or incinerated.

Approximately 50% of the paper is likely to be recycled and the polymer may be released in effluent from the recycling processes. The notified polymer is water insoluble and is therefore expected to be adsorbed to the sludge from the wastewater treatment plant. The sludge will be disposed to landfill or incinerated.

Residues left in empty cartridges (estimated as <1%) will most likely be disposed to landfill.

#### ENVIRONMENTAL FATE

There are no data for the biodegradation of the notified polymer.

The notified polymer has a relatively high molecular weight, it does not contain any charged groups or any groups which can undergo dissociation. Thus the notified polymer is not expected to have any significant water solubility. It is expected to bind strongly to organic matter in soil or sludge from wastewater.

### 7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted.

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The notified polymer has a high molecular weight and is therefore unlikely to cross biological membranes and bioconcentrate within aquatic organisms.

### 7.3. Environmental Risk Assessment

The notified chemical or the printing components containing it will not be manufactured in Australia. The notified chemical will only be imported in sealed purpose built cartridges. After drying the notified chemical is likely to be stable within an inert matrix on printed paper products. At the end of the paper products' useful life it will be disposed to landfill, incinerated or recycled. Approximately 50% of the paper products containing the notified chemical are expected to be recycled in plants located throughout Australia, resulting in up to 2 tonnes per annum being released to sewer. A worst case scenario Predicted Environmental Concentration (PEC) may be predicted assuming that no adsorption to sludge occurs and that 20.5 million persons use 200 L of water per day. The resulting PEC is 1.3 µg/L. (2 tonnes / (365 × 20.5 × 10<sup>6</sup> × 200)). As the chemical is water insoluble it is likely to adsorb to the sewage sludge; the actual PEC is therefore likely to be considerably less than 1.3 µg/L.

The notified polymer meets the PLC criteria and is expected to be of low environmental hazard. In

addition, the relatively high molecular weight indicates that the polymer is unlikely to cross biological membranes and bioconcentrate.

Emptied toner cartridges containing a residue of notified chemical will be sent to landfill for disposal. In landfill, the notified chemical is expected to be immobile, and eventually it will degrade through biotic and abiotic processes.

Based on the polymer's low hazard and limited release to the environment it does not pose a significant risk to the environment.

## 8. CONCLUSIONS

### 8.1. Level of Concern for Occupational Health and Safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

### 8.2. Level of Concern for Public Health

There is No Significant Concern to public health when used in the proposed manner.

### 8.3. Level of Concern for the Environment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

## 9. MATERIAL SAFETY DATA SHEET

### 9.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

## 10. RECOMMENDATIONS

### CONTROL MEASURES

#### Occupational Health and Safety

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself, however, these should be selected on the basis of all ingredients in the formulation.

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Service personnel should wear disposable gloves and ensure adequate ventilation is present when removing spent printer cartridges containing the notified polymer and during routine maintenance and repairs.
- A copy of the MSDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

#### Environment

- Do not allow material or contaminated packaging to enter drains, sewers or water courses.

#### Disposal

- The notified chemical should be disposed in authorised landfill or be destroyed through authorised incineration.

#### Emergency procedures

- Spills/release of the notified chemical should be handled by collecting the cartridge intact and landfilled. Contain the spill and absorb with sawdust, sand or earth. Place used absorbent in suitable sealed containers and follow state or local regulation for the disposal of the waste.

#### 10.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under subsection 64(1) of the Act; if
  - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

- (2) Under subsection 64(2) of the Act:
  - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.